

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended) A process for purification of olefins which comprises:

providing a fluid mixture predominantly comprising at least one olefin of from 2 to about 8 carbon atoms, impurities comprising propadiene and optionally hydrocarbon compounds of from 3 to about 6 carbon atoms having more than one double bond in a total amount of up to about 1 percent by volume based upon the total amount of olefin present and optionally saturated hydrocarbon gases;

passing the fluid mixture through a particulate bed of adsorbent comprising predominantly a support material having high surface area on which is dispersed at least one metallic element in the zero valent state selected from the group consisting of chromium, iron, cobalt, nickel, copper, ruthenium, palladium, silver and platinum, wherein the support is a material selected from the group consisting of alumina, silica, active carbon, clay and zeolites, and has surface area in a range of from about 10 to 2,000 square meters per gram as measured by the BET gas adsorption method [to effect,] under conditions suitable for adsorption within the bed, to effect, in the presence of an essentially dihydrogen-free atmosphere within the bed, selective adsorption and/or complexing of the aforesaid contained impurities with the adsorbent, and thereby obtain purified effluent which contains less than 1 part per million by volume of the propadiene impurity; and

thereafter regenerating the resulting bed of adsorbent in the presence of a reducing gas comprising dihydrogen to effect release of the aforesaid contained impurities from the adsorbent.

2. (Original) The process according to claim 1 wherein the adsorbent further comprises at least one element selected from the group consisting of lithium, sodium,

potassium, zinc, molybdenum, tin, tungsten, and iridium, dispersed on the support material.

3. (Cancelled.)

4. (Original) The process according to claim 3 wherein the metal dispersed on the support material is at least one element selected from the group consisting of iron, cobalt, nickel, copper, palladium, silver and platinum, and the adsorbent has a dispersed metal content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

5. (Original) The process according to claim 4 wherein the fluid mixture passes through the bed of particulate adsorbent at gas hourly space velocities in a range of from about 0.05 hours⁻¹ to about 20,000 hours⁻¹ measured at standard conditions of 0°C and 760 mm Hg.

6. (Original) The process according to Claim 1 wherein the adsorbent comprises at least about 90 weight percent of a gamma alumina having surface area in a range of from about 80 to about 500 square meters per gram as measured by the BET gas adsorption method.

7. (Original) The process according to claim 6 wherein the metal dispersed on the support material is palladium, and the adsorbent has a palladium content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

8. (Original) The process according to claim 1 wherein the olefin in the fluid mixture being purified is predominantly ethylene or propylene, the fluid mixture contains less than about .5 parts per million by volume of hydrogen and less than about 1 parts per million by volume of mercury-containing, arsenic-containing, and sulfur-containing components, each calculated as the element, and wherein the gaseous mixture, while passing through the bed, is at temperature in a range of from about negative 5°C to about 65°C.

9. (Original) The process according to claim 8 wherein the adsorbent comprises at least about 90 weight percent of a gamma alumina having surface area in a range of from about 150 to about 350 square meters per gram as measured by the BET gas adsorption method, and wherein the metal dispersed on the support material is palladium, and the adsorbent has a palladium content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

10. (Original) The process according to claim 1 wherein the adsorbent has a metal dispersion value of at least 10 percent as measured by carbon monoxide chemisorption method.

11. (Cancelled.)

12. (Cancelled.)

13. (Cancelled.)

14. (Cancelled.)

15. (Cancelled.)

16. (Cancelled.)

17. (Cancelled.)

18. (Cancelled.)

19. (Cancelled.)

20. (Cancelled.)

21. (Currently added) The process of Claim 1 wherein the impurities are present in a total amount in a range upward from about 1 to about 5000 parts per million by volume.

22. (Currently added) The process of Claim 1 wherein the impurities are present at a total amount in a range upward from about 1 to about 3500 parts per million by volume based upon the total amount of olefin present and optionally saturated hydrocarbon gases.
